REMARKS

Claims 1-36 are pending. Claims 2, 3, 5, 19-22, and 34-36 are withdrawn from consideration. Claims 1, 6, 30, and 33 are amended. Support for the amendments can be found in the claims as originally filed. No new matter has been added.

Rejections Under 35 U.S.C. § 112, first paragraph

Claims 1, 4, 6-18, and 23-33 stand rejected under 35 U.S.C. § 112, first paragraph for lack of enablement.

In particular, the Examiner asserts that "the specification, while being enabling for inhibiting (decrease) HIV viral infection, does not reasonably provide enablement for preventing such viral infections." The Examiner reaches this conclusion by stating that the prior art indicates that preventing viral infection is very difficult, if not impossible. Further, the Examiner notes that the pharmaceutical art is generally unpredictable and therefore requires each embodiment to be individually assessed for physiological activity.

Applicants respectfully disagree. As an initial matter, the Examiner fully admits that the specification is enabling for inhibiting HIV viral infection. Therefore, Applicants respectfully request that the Examiner withdraw the rejection regarding claims 17, 18, and 23-33 because these claims are directed to methods of inhibiting HIV infectivity (claims 17 and 18) and methods of inhibiting viral attachment/entry or exit phase of a virus. These claims are not drawn to preventing viral infection and instead are drawn to methods the Examiner admits are enabled.

With regard to claims 1, 4, and 6-16, Applicants submit that the specification fully enables preventing a viral infection. However, while not acquiescing to the rejection, but solely to expedite examination, Applicants have amended claims 1 and 6 such that they are directed to methods of inhibiting viral infections. As stated previously, the Examiner admits that the inhibition of viral infection is fully enabled. For the reasons stated above, Applicants submit that the amended claims are enabled and respectfully request that the Examiner withdraw the rejection.

Rejections Under 35 U.S.C. § 112, second paragraph

Claims 30 and 33 stand rejected for reciting the limitation "RNA virus" without sufficient antecedent basis. Applicants have amended claims 30 and 33 so they recite "the virus." Antecedent basis for the virus comes from claim 23.

Claim 33 is rejected for reciting the limitation "sphingomyelinase" without sufficient antecedent basis. Applicants have amended claim 33 so that it recites ",wherein the at least one enzyme essential to ceramide metabolism is sphingomyelinase and the inhibitor inhibits viral attachment/entry . . . "

Claims 31 and 32 are rejected based on the recitation "wherein the N-(ary)retinamide compound inhibits HIV infectivity at a concentration . . . " The Examiner asserts that the specification provides no clear definition for concentration. The Examiner states that it is unclear if the concentration refers to the concentration in the pharmaceutical composition or the concentration in serum. Applicants respectfully disagree. Claims 31 and 32 ultimately depend from claim 23. Claim 23 is directed to a method of inhibiting a viral attachment/entry or exit phase of a virus by "administering a pharmaceutical composition to a cell. . . " The pharmaceutical composition comprises a compound, wherein the compound inhibits HIV infectivity at a concentration of less than 10 μM. Applicants submit that given the recitation of claim 23, it is clear that concentration refers to the concentration of the compound administered to the cell susceptible to infection by a virus.

Claim 33 is rejected for reciting a broad range followed by a narrow range. Applicants have amended claim 33 so that it recites "by about 40% up to about 100%." As amended the claim recites a single range.

Rejections Under 35 U.S.C. § 103

Claims 1, 4, 6-18, and 22-33 are rejected under 35 U.S.C. § 103 as being unpatentable over Maciazek et al. (Journal of Virology, 1998, Vol. 72, No. 7, pp. 5862-69) in view of Gander et al. (U.S. 4,323, 581). The Examiner asserts that Maciazek et al. teach that retinoid represses

HIV core promoter activity and inhibits virus replication. The Examiner then states that "[r]etinoid particularly inhibit the infection of cells."

The Examiner admits that Maciazek et al. do not teach the use of 4-HPR. However, the Examiner states that Gander et al. teach that 4-HPR is a retinoid derivative, having the same function as retinoids, but with low toxicity. The Examiner concludes that it would have been obvious to use 4-HPR for the treatment or for inhibiting HIV infection of cells.

With respect to the recitation in the preamble of claim 23, "inhibiting a viral attachment/entry or exit phase of a virus," the Examiner states that the preamble is generally not accorded any weight where the preamble states only a purpose of a process or use of a structure. Additionally, the Examiner asserts that the preamble is not a limitation where the claim body does not depend on the preamble for completeness and the process steps are able to stand alone.

Applicants submit that a *prima facie* case of obviousness has not been established. Withdrawal of the rejection is requested. To establish *prima facie* obviousness of a claimed invention, all of the claimed elements must be taught or suggested by the prior art. M.P.E.P. § 2143.03. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the results would have been predictable to one of ordinary skill in the art. KSR International Co. v. Teleflex Inc., 550 U.S. 398, 82 USPQ 1385, 1396 (2007).

As an initial matter, the Examiner overstates the teaching of Maciazek et al. Maciazek et al. does not teach that "retinoids particularly inhibit the infection of cells." At best, Maciazek et al. teach that retinoids repress the promoter activity and inhibit virus replication. This is distinct from inhibiting infection because Maciazek et al. does not teach that retinoids inhibit the ability of virus to enter the cell which is the hallmark of infection.

Furthermore, the instant application is directed to "ceramide-generating retinoid." Maciazek et al. do not teach nor suggest the use of "ceramide-generating retinoid" but rather teach and suggest the use of retinoids that function in transcriptional regulation.

As the Examiner noted, Maciazek et al. do not teach or suggest 4-HPR. But the Examiner relies on Gander et al. to cure this deficiency. In doing so, the Examiner states that Gander et al. teach 4-HPR has the "same function" as retinoid. But Gander et al. teach only that 4-HPR has anti-cancer activities as does retinoic acid. Gander et al. do not teach that 4-HPR is functionally equivalent to retinoic acid for all purposes. Therefore, one of skill in the art would not have been motivated to use the 4-HPR taught by Gander et al. to inhibit the expression and replication of HIV virus taught by Maciazek et al.

Additionally, claims 23-33 are directed to the use of a pharmaceutical composition comprising "an inhibitor of at least one enzyme essential to ceramide metabolism." Neither Maciazek et al. nor Gander et al. teach or suggest the use of inhibitors of enzymes essential to ceramide metabolism.

In summary, the references relied upon do not teach (1) inhibition of viral infection, (2) ceramide-generating retinoid, and (3) an inhibitor of at least one enzyme essential to ceramide metabolism. Moreover, a person of skill in the art would not have been motivated to combine the teachings of Maciazek et al. with those of Gander et al. because Gander et al. does not show that 4-HRP is equivalent to retinoic acid for the intended function – repressing gene expression.

It is believed the application is in condition for immediate allowance, which action is earnestly solicited.

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